

## WHAT IS CLAIMED IS:

1. An a.c. motor-inverter integrated drive unit comprising:  
an a.c. motor powered by an alternating current, the motor including a rotor rotatable about a rotation axis, a plurality of  
5 stator cores arranged about the rotation axis at evenly spaced intervals to constitute a cylindrical stator structure, a plurality of stator coils disposed on the stator cores respectively and a plurality of cooling passages formed in the stator cores respectively;  
10 an inverter which converts a direct current to an alternating current and includes a plurality of power drivers which are arranged on the stator cores respectively; and  
wiring members through which the power drivers and the stator coils are connected respectively.  
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2. An a.c. motor-inverter integrated drive unit as claimed in Claim 1, in which the wiring members are the same in shape and construction.
- 20 3. An a.c. motor-inverter integrated drive unit as claimed in Claim 1, in which each of the cooling passages is positioned between one of the power drivers and one of the stator coils.
4. An a.c. motor-inverter integrated drive unit as claimed in  
25 Claim 3, in which each cooling passage, the corresponding power driver and the corresponding stator coil are arranged on an imaginary line that extends radially outward from the rotation axis.
- 30 5. An a.c. motor-inverter integrated drive unit as claimed in Claim 4, in which each cooling passage comprises:  
a first cooling surface that is positioned in the vicinity of the power driver; and

a second cooling surface that is positioned in the vicinity of the stator coil.

- 5 6. An a.c. motor-inverter integrated drive unit as claimed in Claim 1, one of the stator cores, the stator coil disposed on the one stator core, the cooling passage provided by the one stator core and the power driver mounted on the one stator core are arranged in an imaginary block.
- 10 7. An a.c. motor-inverter integrated drive unit as claimed in Claim 6, in which the power driver and the stator coil which are in the same imaginary block are connected through one of the wiring members.
- 15 8. An a.c. motor-inverter integrated drive unit as claimed in Claim 6, in which the power driver in the imaginary block and the stator coil in another imaginary block that is positioned next to the imaginary block are connected through one of the wiring members.
- 20 9. An a.c. motor-inverter integrated drive unit as claimed in Claim 1, in which the plurality of power drivers are arranged around the cylindrical stator structure at evenly spaced intervals.
- 25 10. An a.c. motor-inverter integrated drive unit as claimed in Claim 1, in which the plurality of power drivers are arranged on a cylindrical inner surface of the cylindrical stator structure at evenly spaced intervals.
- 30 11. An a.c. motor-inverter integrated drive unit as claimed in Claim 1, in which the plurality of power drivers are grouped into U-phase, V-phase and W-phase types, the U-phase type outputting U-phase a.c. electric power, the V-phase type

outputting V-phase a.c. electric power and the W-phase type outputting W-phase a.c. electric power.

12. An a.c. motor-inverter integrated drive unit as claimed in  
5 Claim 11, in which the plurality of power drivers grouped into U-shape, V-phase and W-phase types are put in order of U, V and W.

13. An a.c. motor-inverter integrated drive unit as claimed in  
10 Claim 1, in which the stator cores of the motor, the stator coils of the motor, the cooling passages of the motor and the power drivers of the inverter are all nine in number.

14. An a.c. motor-inverter integrated drive unit as claimed in  
15 Claim 1, in which each of the power drivers comprises an upper/lower power switching element.

15. An a.c. motor-inverter integrated drive unit comprising:  
a three-phase a.c. motor powered by a three-phase  
20 alternating current, the motor including a rotor rotatable about a rotation axis, a plurality of stator cores arranged about the rotation axis at evenly spaced intervals to constitute a cylindrical stator structure, a plurality of stator coils disposed on the stator cores respectively and a plurality of cooling passages formed in  
25 the stator cores respectively;  
an inverter which converts a direct current to a three-phase alternating current and includes a plurality of power drivers which are arranged on the stator cores respectively; and  
wiring members through which the power drivers and the  
30 stator coils are connected respectively, the wiring members being the same in shape and construction.